

What is claimed is:

1. A pressure actuated valve for controlling the flow of fluid through a medical device, the valve comprising:

a housing including a lumen extending therethrough; and

a flow control membrane extending across the lumen to control the flow of fluid through the lumen, the membrane including a plurality of slits extending therethrough, wherein, when the membrane is acted upon by a pressure of at least a threshold magnitude, the slits open to permit flow through the lumen and, when not acted upon by a pressure of at least the predetermined magnitude, the slits are maintained closed by a biasing force applied thereto by the membrane to prevent flow through the lumen, wherein each of the slits extends between end portions thereof along a curve and wherein a distance between a first end portion of a first one of the slits and a first end portion of a second one of the slits is a minimum distance between the first and second slits.

2. The valve according to claim 1, wherein the first slit extends along a portion of a curve having a first radius of curvature and the second slit extends along a portion of a curve which is substantially a mirror image of the curve along which the first slit extends
3. The valve according to claim 2, wherein the plurality of slits includes a third slit having a third radius of curvature different from the first radius of curvature.
4. The valve according to claim 1, wherein the first and second slits are disposed substantially symmetrically about a line of symmetry of the membrane.

5. The valve according to claim 4, wherein the membrane is substantially elliptical and the line of symmetry is a major axis of the membrane.
6. The valve according to claim 4, wherein the membrane is substantially circular and the line of symmetry is a diameter of the membrane.
7. The valve according to claim 1, wherein the first and second slits are disposed substantially symmetrically about a point of symmetry of the membrane.
8. The valve according to claim 7, wherein the point of symmetry is a center of the flow control membrane.
9. The valve according to claim 1, wherein the first and second slits are spaced from one another by a distance sufficient to prevent contact between edges of the first and second slits when they are open.
10. A flow control device for a pressure actuated valve, comprising a substantially planar elastic membrane including a peripheral seating portion adapted to be secured to a housing of the pressure actuated valve and a central portion including a first curved slit extending therethrough, the elastic membrane biasing the first slit to a closed configuration in which edges of the first slit are in contact with one another to prevent flow past the membrane, wherein, when the membrane is subject to a pressure of at least a predetermined threshold magnitude, the membrane moves to an open configuration in which the edges of the first slit are separated from one another so that fluid may flow past the membrane through the first slit.

11. The flow control device according to claim 10, wherein the first slit extends substantially along a portion of a circle having a radius of curvature selected achieve a desired flow opening area when subject to the predetermined threshold pressure.
12. The flow control device according to claim 10, wherein the membrane further includes a second curved slit extending through the central portion, wherein the first and second slits are separated by a distance sufficient to prevent contact between the edges of the first slit and edges of the second slit when the first and second slits are in the open configuration.
13. The flow control device according to claim 10, wherein the elastic membrane is a polymeric membrane.
14. The flow control device according to claim 12 wherein the first and second slits are disposed substantially symmetrically about a line of symmetry of the membrane.
15. The flow control device according to claim 14, wherein the membrane is substantially elliptical and wherein the line of symmetry is one of a major and a minor axis of the membrane.
16. The flow control device according to claim 14, wherein the membrane is substantially circular and wherein the line of symmetry is a diameter of the membrane.
17. A dialysis catheter comprising:

a catheter body having a distal end insertable into a blood vessel, a proximal end connectable to a dialysis machine and a lumen extending between the proximal and distal ends; and

a pressure actuated valve disposed in the lumen to regulate flow therethrough and to seal the catheter when not in use, wherein the valve includes a flow control membrane extending across the lumen, the membrane including a first curved slit extending therethrough, wherein, when the membrane is not subject to a pressure of at least a predetermined threshold magnitude, the membrane is biased into a closed configuration in which edges of the first slit abut one another to prevent flow through the lumen and, when the membrane is subject to a pressure of at least a predetermined threshold magnitude, the membrane deforms to an open configuration in which edges of the first slit separate from one another to allow flow through the lumen.

18. The dialysis catheter according to claim 17, wherein the membrane further comprises a second curved slit, wherein the first and second slits are separated by a distance sufficient so that, when the membrane deforms to the open configuration, the edges of the first slit do not contact edges of the second slit.
19. The dialysis catheter according to claim 17, wherein the predetermined threshold magnitude corresponds to a pressure that would be induced within the lumen by connection of an operating dialysis machine to the proximal end and, wherein the predetermined threshold magnitude is substantially greater than pressure that would be induced by action of a patient's vascular system.